Space Weather Forecast

Issued on Saturday, 26 August 2023 at 13:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate flares throughout (R1-R2 Blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with the peak flare a mid Common-class event from a region in the far northwest. There are six sunspot regions on the disc, with the most complex sunspot located in the southeast quadrant. This consists of two opposite polarity spots within the same feature, resulting in an increased flare risk despite any recent lack of activity. The largest region is now moving towards the north-centre disc and has been largely inactive, except for a long duration, low level Common-class flare peaking at 26/1006 UTC. This area is of interest because of the rather uncommon, potentially unstable north-south orientation of its spots. The other regions are all small and simple spots, although one of these that is now approaching the northwest limb, has shown some minor activity in recent days.

The long duration, low-level Common-class flare observed in recent hours may have produced a Coronal Mass Ejection (CME). However, at this time insufficient solar imagery is available to determine if a CME has occurred and if so its precise trajectory.

Solar Wind / Geomagnetic Activity: A largely background solar wind environment was observed as the fast wind from a coronal hole eased, with slow ambient to slightly elevated speeds and a peak of 432km/s at 26/0908 UTC. Speeds were around 370-400km/s at the end of the period. The interplanetary magnetic field (IMF) was largely Weak, but increased from 26/0110 UTC to briefly become Moderate at times. The north-south component has been mainly negative (southward) with only brief periods of positive (northward) direction, but was Weak. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar Activity is expected to be generally Low, but with a chance of isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: A low-level Common-class flare from a region near north-centre disc may have resulted in an Earth-directed CME, however, insufficient solar imagery is currently available to determine if a CME has occurred and if so its precise trajectory. Otherwise there are no Earth-directed CMEs in the forecast. The next forecast solar wind enhancement will be the arrival of a further coronal hole source fast either late day 1 or day 2 (26-27 Aug). These winds then easing day 3 (28 Aug) onward, Geomagnetic activity is forecast to be mainly Quiet at first, but rising to Unsettled with a chance of Active intervals from the fast wind enhancement later day 1 or day 2. Activity then easing to be Quiet with Unsettled intervals later in the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	10	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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